Digital Media
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OUR MISSION:
TO MAP THE DIGITAL WORLD
Join us, and track the future as it happens today

Digital technology, once considered exotic and of limited utility, has become as pervasive as air.

At a rapid clip, the media of communication — print, graphic arts, sound, music, photography, video, film — are being digitized and becoming part of the datastream. Once fundamentally different, when digitized they become fundamentally the same: They can travel down a wire. They can be stored on a disc and combined in ways not previously possible. They can be altered, copied a million times, preserved forever, destroyed in a heartbeat.

This concept is not new. It's the stuff of which science fiction has been made for decades. But it's happening now, and it changes everything.

The move to a world of all-digital media is progressing so quickly that each of us will soon be able to own all the tools to produce our own videos, publish our own books, record our own performances — that is, to make fundamental changes to text, images and sound in way that was impossible even five years ago.

Applications for digital technology will cut to the quick of the industries upon which our society is based — publishing, computing, entertainment, consumer electronics, multimedia, information delivery, telecommunications. These applications will open vast new possibilities and raise troubling ethical questions about the integrity of information and the people who "process" it.

*Digital Media'*s mission is to serve as a vehicle to understanding this powerful transition. And we're confident that no matter what we write about — the computer business, video, telecommunications, broadcasting, virtual reality — we will prove valuable to you.

The shape of those insights will change along with the world of digital media. This issue, for example, covers a recent spate of seismic activity in the world of interactive, computer-based multimedia. We expect that the Multimedia PC Marketing Council (page 17), Apple's QuickTime extensions to its operating system (page 14) and Sony Electronic Publishing's entry into the interactive software market (page 3) all will have a potent effect on the movement of media-based products into the home and business.

Yet we also cover video compression, telecommunications, the European Community's HDTV follies, and the early development of a 40-inch flat-panel display — the long-awaited TV of the future that you will be able to hang on your wall. These are just a sampling of topics *Digital Media* will address each month.

This is no small undertaking. As far as we know, we are the only publication attempting to ride these wild horses all at once yet keep a broad perspective.

That perspective — from philosophical concerns to the very practical problems of how to create and sell products using digital media — is critical to anyone who must understand or use these technologies. The surrounding issues are pressing, and they will affect every business, industry or relationship where people need to communicate with each other through time and space.

We encourage you to subscribe to *Digital Media*. Join us as we chronicle the future as it happens.

– Denise Caruso, Editor

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SONY SOFTWARE ENTERS THE FRAY
Consumer giant champions new media with products and distribution

For some reason, the dance that's been going on for more than a year between companies trying to sell multimedia software without a real player and those trying to sell multimedia players without software titles reminds me of the mating ritual of penguins.

In its early stages, two penguins face off and thrust their heads toward each other in a hypnotic rhythm. This goes on for so long you begin to wonder how they ever manage to propagate the species.

CD-I, CDTV, MPC . . .

Back and forth, right to left. They were, and are, a picture-perfect vision of an industry in stasis, trying to guess the right moment to cut to the chase without getting beaked.

One hand clapping. Meanwhile, Sony Software announced a new Electronic Publishing Division specifically to produce interactive multimedia products. This move should have stopped the mating ritual dead in its tracks, but the various industries touched by Sony's entrance into the software business — video game, CD-ROM and traditional computer program publishers in particular — were surprisingly quiet about the ramifications of Sony Electronic Publishing.

Judging by their lack of response, it was hard to believe that the world's best-known consumer electronics company, with a reputation for technical excellence, more than a few computer products and a pretty good record for anticipating pop-culture trends (not to mention owning a couple movie studios, a TV unit, a theater chain and a record label) — had just announced that it was entering the competitive fray.

Sony does not engage in penguin mating dances. Unlike many technology-based companies, Sony rarely talks about its hardware products for the video game or new-media markets without also talking about the titles or software associated with them.

These close corporate ties have helped Sony shape a strategy that could make it "the" multimedia player company of the 1990s, straddling the present chasm between the consumer electronics and personal computer industries.

Its success depends on a number of variables, not the least of which is its ability to refrain from corporate hubris. The strategy itself, based largely on the motto "The consumer sets the standards," is a significant departure from the approach favored by today's hardware hopefuls, which are banking on big (around $1,000 at least) up-front investments by consumers.

THE SONY STRATEGY

A $2,000 software giveaway. In late May, Sony announced a new CD-ROM product for the PC. Called "Laser Library," the package includes a drive, audio headphones and more than $2,000 worth of software. Suggested retail price: $699. (The kit includes not only the interface card to install in the PC, but the screwdriver you need to open the PC case, too.)

The drive is shipped with six well-known CD-ROMs such as Compton's Multimedia Encyclopedia and Mixed-Up Mother Goose from Sierra On-Line, as well as foreign language-learning programs and manuals for the PC.

Olaf Olafsson, president of Sony Electronic Publishing, says there is a simple philosophy behind the bundling deal: "Lots of companies are developing software without any marketing channels. We have consumer channels for hardware, and we're in the process of developing a special new sales force for new media products. They need champions."

It's said that those champions will be commandeering a dedicated distribution network for Sony's software products, though Olafsson says the network will not distribute Sony products exclusively.

Leveraging the 'installed base.' Laser Library sound quality is close to, but not quite, CD quality. And as you might expect, you can also use the player to listen to conventional audio CDs at true CD fidelity. The multimedia titles will work with computers that people already own — PC clones with CGA graphics, for example. Right now, the CD-ROM connects only to PCs, not Macintoshes. With headphones included, it doesn't require any special add-on circuitry for sound. "We take advantage of what people already have. CD-ROM is relatively cheap now. Why make hardware more expensive for technical milestones?" Olafsson says.

So in Sony's worldview, multimedia software vendors go to market with what they've already developed. Consumers with PCs doing nothing in their closet — waiting with bated breath to join the multimedia revolution — will spend a few hundred dollars to hang a Sony CD-ROM drive off the back and get $2,000 worth of today's best-known multimedia software, "free." Such a deal.

Calling the price question. Unfortunately, one of the things likely to stick in a consumer's craw (at least it sticks in mine) is the apparent cost of the CD-ROM drive itself. A five-disc audio player is only $250 nowadays. Consumers, whether they own PCs or not, don't know or care

about the difference between a CD player and a CD-ROM drive. Since Sony is positioning Laser Library's titles as "free" software, smart buyers are almost certain to call the question: why pay $700 (even $600, street price) for a CD-ROM drive?

Whether the software is compelling enough to rocket people into their local discount electronics store to drop $700 is also at issue, especially in a world where naive consumers don't know how to assess the value of multimedia titles. Today they pay about $10 to $15 for an audio CD. Can Sony (or anyone else, for that matter) convince them that even though the Compton's disc doesn't look like a whole set of encyclopedias, that's what it is?

Perceived value is a serious problem. I spoke to an old high school classmate last week, a Silicon Valley type with no clue about multimedia, who'd just attended his first CD-ROM Conference in San Jose. He said, "I walked all around that place, and I couldn't for the life of me find anything I thought was interesting enough to buy."

The answer to some of these concerns will become apparent when Sony splits the bundle into player and titles, which it intends to do at some point. But it's important to remember that even if Sony drops the price to $400, so as not to destroy its profit margins completely, that's still more expensive than Tandy's new drive, which lists at $399.

These are interesting points to ponder.

WHAT MULTIMEDIA PC?

Though Sony's idea for retrofitting existing PCs does require adding a CD-ROM drive, it is different in spirit from that of the Multimedia PCs (MPCs) now hitting the streets (see related story on page 17). MPC upgrades require both additional hardware (a sound board and CD-ROM drive) and software (Microsoft's multimedia extensions to Windows), and cost just under $1,000 with no software. Because he believes "consumers set the standards," Olafsson has a wait-and-see philosophy about whether Sony will publish software for the MPCs. But it's clear he's not enamored of Microsoft and is skeptical of the MPC as competition.

"Microsoft makes people pay its market development costs, dictates the hardware specs, dictates what the consumer wants and dictates the price point to enjoy it. The level of dictation may be too high," he says.

"It's the consumer hardware and software companies who are making the investment. Not everybody can afford a $3,000 PC, and when there's a new technology like [multimedia], I don't think that it's polite to tell people that the PCs they already bought can't do it," Olafsson adds. "If people want to [upgrade to the MPC], it's okay. But we'll take advantage of what they have."

The Diskman cometh. The mirror reflection of this problem is the DataDiskman, just introduced in the U.S. at last week's Consumer Electronics Show. Another part of Sony's home media puzzle, it's devoted mostly at this point to portable information delivery and retrieval.

Not yet capable of handling much in the way of digital media (and completely incompatible with any existing CD format, don't forget), the Diskman is not a contender in the short term as a multimedia player. Though it can play audio CDs, the DataDiskman information titles cannot incorporate other media, not even sound.

Sony's market researchers say a typical customer for new Sony products is a 35-year-old professional white male making $50,000 to $60,000 per year. But Olafsson believes the DataDiskman has a far broader appeal, that a growing number of today's Sony customers are women who are more education-and information-oriented. "Women will also buy DataDiskman products for their children, to have a portable library," he says. "It's information with consumer appeal."

Sixteen bits of hope. It is no secret that Sony is working closely with Nintendo on CD-ROM hardware to hook up with Nintendo's new 16-bit game machine, the Nintendo Entertainment System. A similar strategy has been announced by both Sega and NEC Technologies, which has adapted its own CD-ROM drive to its 16-bit TurboGrafx game machine (see a related news story on page 16).

If Nintendo remains market leader, Sony hopes the combo will be the jumping-off point for a true multimedia machine in the home. Video games are a natural repository for Sony's connections into the film, video and music archives of Sony Software.

Already today, Olafsson says, when a property becomes available, executives meet and discuss three or four different ways they might repackage and resell it as software.

Though the game machine/CD-ROM strategy is one of the most hopeful for driving an entertainment player standard, it is also one of the riskiest. As Nintendo prepares to launch its 16-bit player, parents are starting to ask the question, "Why should I spend another X-hundred dollars on another game system?" And despite youngsters' fairly steady level of interest in video games over the past few years, the market for 16-bit game machines is definitely unproven.

Hot-wiring the home. In any case, it is almost impossible to conceive that Nintendo can convince another 30 million customers to replace their present Nintendo units with the new 16-bit machines, and Sony's new CD-ROM drive does not connect with Nintendo's 30 million 8-bit machines.

This is not a trivial concern. It should be giving not just Sony, but all consumer electronics vendors pause before they introduce new, incompatible hardware products into the cyclical video game market — especially if they're hoping to hot-wire them into multimedia entertainment centers.

It's very likely that any combination of game machine and CD-ROM drive is going to have to provide value in more genres than entertainment.

Moreover, unless Sony can convince Nintendo to undergo a sea change regarding the way it displays graphics on its machines (it uses a primitive tile graphics display, good for keeping

hardware cheap but very limiting and difficult to develop for), Sony is likely to find that its grand plans to repackage its massive stores of entertainment content — movies, videos, music — will be hard to fulfill.

WHITHER CD-I FOR SONY?

Consumer appeal is certainly the question of the hour for Philips and its Compact Disc-Interactive (CD-I) devotees. Sony has a long history of collaboration with Philips on optical disc technology and standards, including an early commitment to CD-I. In fact, it is readying a CD-I player for market.

Philips and the software publishers it is wooing continue to perform the penguin mating ritual, which puts Sony in an awkward position. Listening to the shouting matches between Philips and other hardware and software factions at multimedia conferences makes it clear that despite Philips's massive PR effort, the industry is not prepared to embrace CD-I, market-unseen.

Though not wanting to look as if it's undercutting a partner, Sony is obviously among those waiting to see if a CD-I market materializes.

Olafsson believes that if CD-I is a success, it will most likely hit pay dirt in business and education, rather in than the consumer market. If CD-I looks as if it might make a dent in the marketplace, he promises Sony Electronic Publishing will be ready with titles to sell. "We haven't limited our internal creativity in regards to other platforms or formats," he says.

Muddying the waters. So that's Sony's strategy in a nutshell. Become the information and education multimedia player-and-titles publisher on the PC by enticing owners to hang a CD-ROM drive off the back of their dusty, closeted computers.

Bring another (proprietary) platform, the DataDiskman, into the U.S. market to deliver information and educational products to the home.

Grab yourself a CD-ROM port on the back of a Nintendo machine and become the multimedia player-and-titles publisher in the interactive entertainment and video game business.

Hedge your bets on CD-I and MPC. Clearly throw your weight behind your new Mini Disc (MD) read-write optical disc technology, extensions to the MPEG video compression standard, and a new high-density CD format. Then work hard and fast with companies like JVC and Matsushita on distributing digital movies.

Last but not least, start your own distribution network to "champion" new media products.

Hierarchy of needs. But there are some fundamentals Sony must heed to achieve media supremacy:

- The titles community is in a snit about a rampant rumor that Sony is going to close its dedicated distribution channels for interactive media to anyone but its own sweet self.

Olafsson is adamant that this is not true; he says Sony will definitely use its channels to distribute product from other publishers. Let's hope Sony continues to resist temptation. Though initially such a move might seem like a good way to jump-start a new industry, it is more likely that the converse is true. If a thousand companies are making and distributing new-media products, a diverse and lively market is born. Not to mention that by doing so, Sony can make some money off its competitors, too. Not a bad deal for all concerned.

- With so many incompatible optical disc formats on the market — at least two of them (MD and DataDiskman) sold right now by Sony — it's vital that Sony start a developer relations (i.e., "evangelism") program. Sony cannot afford to alienate third-party developers by being secretive about new hardware plans. (As a matter of fact, it might be nice if Sony even came up with a cross-platform authoring system.) Microsoft's "System Software vs. Applications Developers" dilemma is in effect here — Sony's Electronic Publishing people haven't quite figured out whether or not they're competing with third parties. The answer is, "Yes, you are. And that's a good thing."

- Sony also needs not to be piggy about licensing content. It does own a lot of creative properties, which does provide it with competitive advantage — i.e., first crack at turning music, videos and film into multimedia — and it has good relationships with people who know how to create it. In the same way Sony can collect royalties from competing publishers by distributing their products, it can create another a tidy business from licensing content to them.

- Sony must move beyond the entertainment thing. Education and information will be giant consumer products for new media in the future. Despite Sony's expertise in consumer/entertainment hardware and its holdings in creative content, attention directed toward useful, less volatile products will yield greatly in time. Luckily, Olafsson believes that both Laser Library and the DataDiskman, and probably CD-I as well, fall into this category. Still, there are a lot of information and education titles out there waiting to be created, and it would be helpful if he were to start cultivating independent developers now who are good and who want to do this kind of software.

- Probably most important, Sony must find and develop expertise in interactive software design. This is not the time to rely on people whose experience is text-based CD-ROM products — or for that matter, on film producers. There are lots of people in the business who know lots about making interactive products, and with the shape of the economy, they're probably about to be laid off, so they're around. If I were Olafsson, I'd get an AppleLink account right away and post my address.

No more mating rituals. Sony Electronic Publishing is in a powerful position, and Olafsson holds a great deal of power over the future of new media software. But he does not have an easy row to hoe. One developer put it rather succinctly: "I think it's going to be difficult for him. In one way, I'm just amazed at what he's created, but that comes with its own overhead and expectations."

For some reason, those expectations always seem to center on a kind of benevolent-dictator fantasy, that the industry's vastly powerful corporations — Sony, Microsoft, IBM, HBO, Disney — will use their power to do precisely the right thing for everyone involved. This is, of course, impossible. And in a world where these companies are engaged in a life-or-death battle for market supremacy, the most anyone should really hope for is to not get beaked during mating season.

Sony appears to have gone much farther than that, though, by using existing hardware as a platform for multimedia software, by opening its distribution channels and by encouraging the growth of the titles business. Though he knows Sony's strategy isn't necessarily perfect, Olafsson's first priority is to get some multimedia products on consumer shelves now, not wait for just the right platform and software. No more mating rituals. "The idea is to do a little now and something fantastic later," he says. "You can't buy creativity, but nobody likes to work in an operation that loses money, not creative or business people."

<div align="right">– Denise Caruso</div>

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EUROPE'S RUSH TO ANALOG HDTV
Why on earth, when the world is going digital?

The Japanese consumer electronics companies are rushing toward delivery of broadcast-quality video on new-generation compact discs. Several companies are proposing their own compressed digital formats for direct satellite broadcast in the U.S. The cable industry is abuzz over the prospect of delivering compressed digital broadcasts and entertainment over coaxial or fiber-optic lines. Four of the five outstanding proposals for an American high-definition television (HDTV) standard are either all-digital or hybrid analog/digital.

Surely, the Europeans must be rethinking their own analog HDTV standard. They cannot possibly want the European market and European products and services to be left behind the rest of the world. Sorry! The European Commission, true to its heritage of making Politically Correct decisions, appears determined to push ahead with what it's calling HDMAC, the European high-definition standard, as rapidly as possible.

On June 3, the Commission was to present to the Common Market telecommunications ministers a draft directive for implementing HDMAC. The draft is a product of several months of negotiations on how to implement analog HD without serious discomfort to any of the principal affected parties. There does not appear to have been serious consideration of scrapping HDMAC and going directly to a digital standard.

We understand that the draft will set HDMAC as the new European television standard, replacing the current PAL (Phase Alternate Lines) standard. European television manufacturers, broadcasters, satellite operators and cable companies are expected to agree to form a consortium to promote the introduction and adoption of European wide-screen, high-definition television. To smooth the transition, the Commission (on behalf of European tax-payers) has reportedly agreed to subsidize satellite operators for simulcasting programs in both PAL and HDMAC formats, and to subsidize broadcasting companies for converting old movies and program content to high-definition format.

Good thinking! Why in the world is this happening? The overriding motivation appears to be to beat the rest of the world to HD and to create a new consumer market for Philips and Thomson. The Commission's plan will cost the European taxpayers billions of dollars per year in subsidies,

and it will probably prevent them from realizing the benefits of digital delivery, on-demand video and interactive TV that their American counterparts could get.

Ironically, it may actually do the European consumer electronics industry more harm than good. It is ludicrous to push analog technology in Europe when even Philips is part of the consortium working on digital HD in the U.S. There is nothing (except for protective European quotas) that will prevent the Japanese consumer electronics companies from making televisions to the European standard and selling them in Europe. And the European manufacturers, with their attention focused on HDMAC analog HD, will most likely miss out on the ultimate shift to digital, which will happen in the rest of the world.

PacBell's loss is big gain for Raynet: New VPs commit to fiber network and services

Within the past two months, Raynet Corp. of Menlo Park, California, has cherry-picked two savvy technologists from high atop the corporate tree at Pacific Bell to spur the installation of fiber-optic phone lines into the home.

Michael Bandler, former PacBell vice president of network technology, and Thomas Edrington, PacBell's assistant vice president of science and technology, have joined Raynet in executive positions created especially for them.

Raynet, a subsidiary of Raychem Corp., is offering "fiber in the loop" systems at a price close to that of existing copper systems and is committed to becoming a major supplier of fiber-optic connections to public network companies. ("Fiber in the loop," or FITL, is the fiber connection from a phone company's central office into individual homes and businesses.)

By snagging Edrington and Bandler, both of whom are vocal advocates for modernizing the public network, Raynet is hoping to convince telephone companies nationwide to install fiber-optic telephone systems into residences and small businesses some time before the end of the millennium.

Diplomacy vs. warfare. Bandler, Raynet's new executive VP, is a 30-year phone company veteran and corporate officer; he'd served as VP of network technology at Pacific Bell since 1982. He's already busy lobbying the Bell companies to get off the dime and install fiber in the loop, and persuading politicos to take regulatory action toward smoothing their path. "We want them to install it now," says Bandler.

Edrington's job is trench warfare to Bandler's diplomacy. As VP of customer service, he has to wrestle with customers who must be convinced of the absolute reliability of a fiber phone network. But his ability to convince them of its utility may prove equally vital.

A 24-year telecom veteran, Edrington established the first research and development group within Pacific Bell. Before he left for Raynet, he was director of all technology labs at PacBell. One was the Advanced Communications Laboratory (ACL) in San Ramon, California, site of many experimental fiber-based services created and tested by Edrington's staff.

A dial-up library. One of the home applications being tested in ACL was "LiberNet," a dial-up "library of the future" with fully integrated media capabilities, including full-motion video, sound and language translation, and fiber transmission of high-definition television (HDTV).

Another mind-boggler was a network application on two Sun workstations in different buildings connected via a fiber link. A demonstration showed the workstations simultaneously running a financial application while displaying full-motion video, stills and text.

At the same time, a live video link was left open between the two workstations without degrading the network's operation. The two users could share an active, internal screen–the much-ballyhooed "electronic whiteboard" — which both could use to display and manipulate data in real time. "My bet is within three or four years, the way bandwidth is going, this technology will yield some very useful applications," predicted Edrington.

Now that's broadband. Most people understand that fiber is the perfect delivery vehicle for future media-intensive home applications such as interactive TV, dial-up video and audio, "virtual reality," multiple-player video games and online information services because of its enormous capacity and speed. But few people appreciate how much bandwidth fiber really provides.

Light moving down an optical fiber was last clocked in the labs at 40 billion bits per second, but the theoretical limit is believed to be in the trillions-per-second range.

For perspective: an uncompressed HDTV signal moves at a comparatively puny 100 million bits per second. A math calculation or two makes it obvious that the capacity of an optical fiber phone line is limited only by the robustness of the electronics — i.e., the switches and splitters that pump and route the signals — on either end of the connection.

Attitude problem. Most long-distance lines and switching centers nationwide are already wired with fiber, and many large corporations are setting up private, fiber-based phone networks. But federal regulations on the cost of telephone services and legal restrictions from the divestiture of the Bell System in 1982 have stymied the installation of fiber to residences.

A significant, related factor is that 70 percent of the physical connections provided by phone companies — i.e., the "loop" into houses and small businesses — account for only 30 percent of their revenue. Telcos say this doesn't give them sufficient financial incentive to take on the massive job of replacing copper with fiber — unless, of course, they are allowed also to sell the services they transmit over fiber, presently forbidden by the Justice Department's 1982 divestiture ruling.

An overview of the attitudinal, competitive and regulatory roadblocks to deploying a fiber infrastructure is a subject for another issue of this newsletter. But for now, just as the consumer electronics industry is based on the de facto ceiling of "no gadget more than $1,000," the telephone industry will not install fiber nationwide until fiber is at least as cheap as existing copper-wire systems, and until it is convinced there is money to be made on billable services to fill fiber's enormous bandwidth.

– Denise Caruso

Ignorance is not bliss for MPC vendors: Microsoft forms Council to build awareness of MPC label and products

On June 3, in a massive, worldwide effort to promote Microsoft Corp.'s Multimedia PC (MPC) specifications, Microsoft and 10 personal computing companies including Tandy Corp., Zenith Data Systems, Philips and AT&T Corp. announced the formation of the MPC Marketing Council.

"We're not sure the industry understands multimedia, especially after seeing some of the presentations at Comdex" last month, said Darby Williams, product manager for Microsoft's multimedia systems group. "Most developers still don't know what it means or what to start with."

The marketing council, founded by Microsoft, is now incorporated as a non-profit subsidiary of the Software Publishers Association (SPA). Ownership of the MPC logotype mark has also been transferred to SPA to administer.

"We want all information publishers and software publishers to build applications to MPC specs, and SPA has the best installed base," said Williams. "Also, they know how to protect intellectual property rights, and that's what the mark is."

The council's primary purpose is to encourage and support both hardware and software developers building products to Microsoft's MPC specifications.

Companies pay a sliding scale to join the association based on their affiliation. A computer system company such as Tandy, for example, pays a base fee of $250,000 to join the Council and will pay an additional fee per unit sold or delivered.

International hardware companies, or those providing only MPC upgrade kits such as Media Vision (Fremont, California), will pay "far less than" $100,000 to join, according to Williams. The last tier of membership is for software developers, who will pay less than $1,000 to join.

Members' products are required to connect with Multimedia Windows program interfaces, to work with MPC computers and software, and to use at least one media element such as sound or video. Members are then entitled to use the MPC logo on their products to signify compatibility, in much the same way that the tags "VHS" or "Compact Disc" are used today.

The 12-member Council board includes SPA executive director Kenneth Wasch, Williams of Microsoft, Jerry Calabrese of Philips, Julie Galliers of AT&T, Paul Jain of Media Vision and Jim Anderson of Headland Technology/Video7. The group elected as chairman Mike Grubbs, senior director of marketing for Tandy Corp. Tandy announced the first commercially available Multimedia PC in Palm Springs last month, and it has made a major corporate commitment to MPC.

The initial infusion of capital from shareholders will be used for "furthering the cause" of MPC, Grubbs says. Ongoing revenues will come from licensing deals with members.

A full-time staff member will be devoted to promote MPC and to provide education and information to the application development community.

"The MPC is an application delivery platform," says Grubbs. "So we thought SPA would be a good marriage for us because its constituency benefits from [the Council] and is a driving force behind it."

Though the SPA match may seem perfect, the Interactive Multimedia Association (IMA), formerly the Interactive Videodisc Industry Association (IVIA), is likely pouting over the selection. Many believed that IMA would be tapped for the job of administering the MPC trademark.

Williams wouldn't comment on the IMA rumor. But in its IVIA incarnation, IMA was committed to both analog technology and cross-platform compatibility, neither of which is a focus for the MPC Council. But at Comdex in May, IMA announced it would be forming a compatibility steering committee, and it's said it may be starting a technical working group to help guide future versions of the MPC specification.

– Denise Caruso

Coming soon: flat-panel TVs: Large LCD panels, light valve projectors

The bulky, power-hungry CRT display seems headed for near-certain obsolescence. Liquid-crystal displays, till recently too expensive for consumer TVs and too difficult to manufacture at large sizes, are now coming into their own. Liquid-crystal light valves, a related technology, are being developed for projection TVs.

Beating the CRT. Before liquid crystal technologies begin to displace CRTs in mass-market products, they must drop in price and grow in resolution. LCDs don't have to be quite as cheap as CRTs — flat panels have advantages of size and weight — but they can't be more than two or three times as expensive if they are to find use in computer markets. Even in the laptop PC market, where cost is not as important as size and power consumption, most buyers have shied away from the high prices.

The key to price cuts is yield. The more pixels in a display, the likelier that there will be defective cells, rendering the whole unit useless. However, larger displays need proportionally more pixels, or image resolution suffers. That, in turn, raises the problem of controlling individual pixels; due to the comparatively slow switching times of liquid crystals, line-oriented passive scan approaches quickly run out of steam.

Japanese efforts. One large-scale LCD project has been started under the aegis of Japan's Ministry of International Trade and Industry (MITI). The shareholders, including Key Technology Center, Sharp, Hitachi, NEC, Casio and Asahi Glass, have pledged funding that

totals 2.8 billion yen ($20 million). The project goal: a prototype full-color 40-inch display by the fall of 1993.

The current state of the art is nowhere near a 40-inch display. Ten-inch flat displays are only now moving into the mass-production stage. The largest color panel now made is Sharp's 14-inch device, although Hoshiden has shown a prototype of a 15-inch unit.

Mobile applications. There's nothing like a high-volume application to push technology along the learning curve. A number of Japanese firms are looking to automotive navigation systems, along with radio displays and engine meters.

But mobile systems have problems besides cost and resolution. Temperature sensitivity is a critical issue; a display would have to survive a range from 80˚C (176˚F) down to-40˚C (-40˚F), although the working range could probably be narrower. Vibration is also a problem.

Eliminating pixels. According to the June Popular Science, an American firm, Projectavision, has patented a way to boost resolution optically. First, its device superimposes the red, green and blue dots rather than placing them side by side as in conventional systems. Second, Projectavision puts a tiny lens in front of each pixel. The improvement is said to be "dramatic."

Projectavision's prototype, described as a medium-resolution LCD panel, is being built in Austin, TX, in partnership with Microelectronics and Computer Technology Corp.

– Peter Dyson

Sony's Mini Disc: the end of tape?

Sony has recently announced yet another digital media format. The 2.5-inch "Mini Disc" (MD) could presage the beginning of the end for audio tape and could introduce a compact CD-audio data format with immense appeal for multimedia and computer applications.

The Mini Disc is made possible by two very impressive technologies. The first is a specially designed laser read/write system that enables an MD player to write (and read) a magnetic-optical disc as well as to play read-only optical CDs. This means that the same inexpensive drive can be used to record (and play back) digitally encoded music as well as to play back mass-produced optical CDs.

The second technology is a digital sampling technique that allows the Mini Disc to record 74 minutes of near-CD-quality stereo sound on a disc that holds just over one-fifth the data of a conventional CD.

The disc itself will be housed in a plastic "caddy" similar to that used for the familiar 3.5-inch computer disks. Data is read off the disc at the same rate as from a standard CD (approximately 1.4M bits/second), but it is fed to the decoder at 300K bits/second. An inexpensive 1M-bit memory chip can provide up to three seconds of buffering and make the disc drive virtually immune to shock and vibration.

Markets. Sony is clearly targeting the audio market now served by tape cassettes, especially "Walkman" type portables, boom boxes and car stereos. The Mini Disc should be able to serve all of these markets better than even digital tape. (Imagine a 15-disc MD changer in your car's dashboard!)

Although MD players will not be available until the end of 1992, it looks like a winner.

The Sony digital audio tape (DAT), Philips/Tandy Digital Compact Cassette (DCC) and Sony Mini Disc technologies will be examined in our next issue.

– Jonathan Seybold

I/O
'Watch out for Microsoft,' says CD-ROM vendor

Microsoft's recent acquisition of exclusive rights to Dorling Kindersley's inventory of literary properties has put the community of electronic publishers on notice — it is clear we will be competing directly with a Microsoft intent upon dominating electronic publishing. Recent history has shown there is no way to win competing with Microsoft on its own turf.

Min Yee, the president of Microsoft Press, has been quoted as saying, "I don't think other publishers like Random House are scared of us." They ought to be terrified. The Dorling Kindersley library includes over 400 titles in print, including the *AMA Family Medical Guide* (7.5 million books sold, 6 million by the aforementioned Random House) and *The Way Things Work* (1.5 million sold). DK has more than text. There are reportedly over 300,000 images in DK's archives. Factor in Microsoft's rumored development of the *Columbia Desktop Encyclopedia* on CD, and it is clear that Microsoft has picked off the sweetest publishing opportunities in the realm of home reference.

Dust in the wind. Electronic publishing is as yet a tiny portion of the traditional publishing business, and many big publishers have not taken note of this turn of events. The threat Microsoft poses to their future should be noted immediately. In the words of the Software Industry Bulletin, "Traditional publishers should be scared of Microsoft — They should be evaluating multimedia technologies and opportunities now to avoid a scenario five or ten years from now where they are only minor players in a new publishing dimension." And we small publishers are merely dust in the wind.

If Microsoft can accomplish one simple goal, then the game is indeed over before it has really begun. That goal is the exclusive licenses, Microsoft can play out a strategy not unlike the one contemplated by Sony in its acquisition of CBS Records and Columbia Pictures. With the acquisition of DK, Microsoft is strides ahead already, and it has a great deal of money left in the coffers.

Microsoft is preparing for a contest that will pit it against an array of world-class electronics companies (Sony, Philips, Commodore, Apple, IBM and others). The prize to be won is the American Home. The competitors will be selling low-cost CD-ROM-equipped computers, much

like Commodore's CDTV product. With the right properties exclusively held, Microsoft can make life miserable for anyone interested in electronic publishing.

No exclusivity. The prescription for big publishers is simple: don't sell Microsoft or anyone else exclusive rights. They could uses such rights to withdraw key properties from exploitation on platforms competitive to the Multimedia PC. Or they might just decide to compete on those platforms, as well. Note well what Microsoft has accomplished on the Mac — a platform directly competitive to DOS.

The prescription for fledgling electronic publishers is equally clear. Before they spend the $200,000 to $400,000 it will likely take to develop a shippable multimedia title on CD-ROM under Multimedia Windows, they should calculate how long they will have access to shelf space before Microsoft picks them off. They should be equally careful about carrying on open discussion with Microsoft personnel about product plans.

Bill Gates is reported in a major computer trade magazine to have warned a friend not to tell him anything that he might use to competitive advantage, as he would not hesitate to use it for just that purpose.

That is precisely the kind of strategic partner one can expect to have in Microsoft. Ask IBM.

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EVENTS

International Design Conference in Aspen
June 16-21, Aspen, CO
Aspen Center for Physics
(303) 925-2257; fax (303) 920-1167
Though best known as "the" designer confab, Aspen is now known as one of the seminal events for interactive multimedia

Virtual Worlds: Real Challenges
June 17-18, Menlo Park, CA
SRI International
(415) 859-3382; fax (415) 859-2861
A first. Should provide intelligent discussion on technical and interface issues, practical current and future applications. Attendance is very limited.

SIGGRAPH
July 28-Aug.2, Las Vegas, NV
ACM-SIGGRAPH

(212) 752-0911
Annual meeting of the special interest group on graphic of the Association of Computing Machinery (ACM). One of the industry's most stimulating shows. Highlight include screening of 50 computer animation shorts and gallery for computer-generated.

Macworld Expo
August 6-9, Boston, MA
Mitch Hall Associates
(617) 361-8000
Everyone goes, despite universal distaste for the fact that it's in Boston in the middle of summer. This year, expect massive doses of System 7 and QuickTime demonstration and applications.

Seybold Computer Publishing Conference + Exposition
October 1-4, San Jose, CA
Seybold Seminars
(213) 457-5850; fax (213) 457-4704
The annual "must attend" event in computer publishing and graphics. If we do say so ourselves.

International TAPE (Technology, Aesthetics, Politics & Education/Entertainment) Symposium
October 16-18, San Rafael, CA
Dominican College Academy of Professional Development
(415) 485-3255
Dominican College is celebrating the 100th anniversary of film with this symposium for media professionals, technologists, business leaders, artists and scholars.